What are Supervisors Expected to know about Integrated Safety Management?

June 6, 2007

Overview of DOE Assessment of ISM at BNL

I. Department of Energy Integrated Safety Management Assessment Schedule

The overall inspection process has several stages; which include: scoping, planning, onsite inspection activities, validation, and closeout. Many of the planning activities including team orientation, facility tours, and preliminary document reviews are conducted prior to the onsite inspection visit.

The onsite inspection (the main phase) will be conducted over a two week period. During this period, inspection activities will be performed throughout the BNL Complex. Those activities include: interviews, walk-downs, work observations, and document reviews. Following completion of the onsite inspection visit, a draft report will be prepared and made available to line management for review and feedback. The overall schedule that the DOE Headquarters prepared for BNL is provided below.

Scoping Visit	May 8th and 9th, 2007 ***Completed***
Planning Visit	August 6th -- 10th, 2007
Onsite Inspection Visit	August 20th -- 31st, 2007
Report Validation/Closeout	September 26th – 28th, 2007

II. Scope of the Inspection

The Office of ES&H Evaluation's role is to provide an independent evaluation of ES&H program effectiveness, which gives line management essential feedback on program status and direction. The approach the team will take is to conduct carefully targeted, in-depth reviews of particular aspects of work planning and control, event and issues management and feedback and improvement program activities.

To evaluate performance the team will focus on work observations, limited-scope performance tests, facility walkthroughs and analysis of program documentation, and work in progress). These activities will target all work performed at BNL (i.e., operations and Science).

After thoroughly reviewing evaluation reports from recently assessed DOE facilities (e.g., Pacific Northwest, Stanford Linear Accelerator, Oak Ridge, and Argonne National Laboratories), it is believed that the specific ES&H focus areas to be evaluated at BNL will include:

- Work Planning and Control Processes (worker planned, prescribed [standard operating procedures] and permit planned)
- Feedback and improvement, event reporting, operating experience, issues management;
- Workplace Monitoring of Non-radiological Hazards; and
- Environmental Management System Impacts.

Typical questions DOE will use to evaluate specific Environment, Safety and Health (ES&H) focus areas and BNL Implementation Processes are summarized in the remainder of this document.

Overview of DOE Assessment of ISM at BNL

Supervisor Expectations

1. Know and support the concept **"All Work is Planned"**. Know how your work is planned and controlled in your everyday work activities (i.e., worker planned, procedures, work permits, experimental safety reviews, job walk downs, etc…)

2. Be actively involved in identification, planning and improvement of work and work practices.

3. Encourage employees/co-workers to bring forth safety issues, concerns and improvement ideas.

4. Consider the influence human factors can have when assigning work and on your decision-making.

    a. Are we cutting corners by rushing to meet a deadline?
    b. Are we taking hazards/controls for granted because we've done this many times before?
    c. Are our desires to succeed technically compromising sound environment, safety and health (ES&H) judgment?
    d. Do we have adequate knowledge and experience to plan the work/job?

5. Be familiar with your facility documentation and work authorizations, including facility operating boundaries [Facility Use Agreements], Job Risk Assessments and how they are integrated into your organizations work planning and control processes.

6. Even though an activity may "seem safe", review a new task to identify if activities go beyond the scope of work authorized. Take two minutes to verify that current activities have not crept beyond the scope of work authorized.

7. Display individual attitude and responsibility for safety

    a. Accept responsibility for safe performance
    b. Have and encourage workers to have a questioning attitude by challenging assumptions.
    c. Consider potential adverse consequences of planned actions
    d. Assist each other in preventing unsafe acts or behaviors to reduce risk of injuries
    e. Reassess the job/activity when something unexpected happens

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Integrated Safety Management (ISM) and the Supervisor

1. **Core Function 1 - Define the Scope of Work** – Missions are translated into work, expectations are set, and tasks are identified. Scope of work includes basic and applied research in science and technology departments, operations, maintenance, construction and support activities,

   a. **Typical Questions you may be asked:**
      - **i.** Is work defined at the task level such that the individuals performing the work, supervisors, planners, and appropriate ES&H personnel can readily identify the hazards and risk associated with both the work activity and the location in which it is performed?
      - **ii.** Do work planning processes provide for early involvement of workers, and safety and health personnel, to fully define the work to allow identification of hazards?
      - **iii.** Are tasks for minimizing waste generation and controlling the release of effluents to the environment adequately defined during work planning?
      - **iv.** How do you define the scope of work?

BNL Processes for Defining the Scope of Work

- Experiments, operations, maintenance and support activities are governed by Work Planning and Control for Experiments and Operations subject area. The subject area describes the various levels of work: experimental safety review, Worker Planned, Prescribed work, and Permit Planned.

- Processes and procedures for defining work activities rely on strong worker involvement and individual attitude and responsibility for safety, which is accomplished through the development and use of experimental safety reviews, work permits, standard operating procedures, and/or Job Risk and Facility Risk Assessments (JRAs/FRAs) (including pre-job walk downs and briefings) to insure that staff involved with the activities understands the work they are asked to perform, understand the hazards, specific controls, and performance expectations of their work.

- Assignment of work Activities by managers/supervisors. Individual performance goals & Roles, Responsibilities, Authorities & Accountabilities (R2A2s). Proposals for experimental work define the scope of experimental work activities.

- Mechanisms for defining the scope of work include: job site walkdowns (by workers, planners, estimators, or ES&H professionals), pre-job briefings, radiological work permits, experimental safety reviews, work permits, work orders, plan of the day meetings, or standard operating procedures.

2. Core Function 2 – Identify and Analyze Hazards Associated with the Work – Hazards associated with the work are identified, analyzed, and categorized.

a. Typical Questions you may be asked:

- **i.** Have any hazards that are significant and/or unique to particular work activities been clearly identified and documented?
- **ii.** Are hazards adequately communicated to all workers and subcontractors by way of work packages, procedures, instructions, permits, training and pre-job briefings?
- **iii.** Are hazards analyses sufficiently detailed to identify appropriate controls?
- **iv.** How are hazards identified with your work?

BNL Implementation Processes for Identifying and Analyzing Hazards

- Workers and Subject Matter Experts (SME's) such as: ES&H Coordinators, Work Control Coordinators, Safety & Health Service, Environmental Compliance, and Facility Support Representatives working in the field lead the effort in identification of hazards (i.e. environmental, radiological, industrial safety and/or industrial hygiene surveys).
- Pre-job planning meetings, pre-job walkthroughs, review of lessons learned, review of standard operating procedure precautions are some of the avenues used to identify hazards.
- Experimental Safety Review (ESR), environmental process assessments, Work Permits and standard operating procedure (SOP) development processes include the identification & analysis of hazards.
- Identification, analysis and documentation of hazards is accomplished through the development and use of Job Risk and Facility Risk Assessments (JRAs/FRAs) (including pre-job walk downs and briefings) to insure that staff involved with the activities understands the hazards, specific controls, and performance expectations of their work.
- The Facility Use Agreements (FUAs) lists hazards associated with the facility and provides the operational boundary for the subject facility. TIER I Inspections. Environmental, industrial hygiene, safety and radiation monitoring and surveys.
- Workers are trained to recognize job specific hazards. Work in progress reviews and/or Worker Observations. Boundaries are set for work activities. If conditions extend beyond training and experience workers interrupt or stop work.

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Integrated Safety Management (ISM) and the Supervisor

Core Function 3 – Develop and Implement Hazard Controls – Applicable standards and requirements are identified and agreed-upon, controls to prevent/mitigate hazards are identified, the safety envelope is established, and controls are implemented.

a. Typical Questions you may be asked:

- **i.** How are hazard controls developed and implemented for the work you are to perform?
- **ii.** Are hazard controls sufficient to ensure that facility and other operating limits are not exceeded?
- **iii.** Are standardized hazard controls developed and used on a graded approach that considers work complexity, performance frequency, and magnitude of the hazards?
- **iv.** Is there appropriate linkage between tasks, hazards, and controls in work control documents?

BNL Implementation Processes for Developing and Implementing Hazard Controls

- Hazard controls are established through: (1) Elimination/Substitution (e.g., use of a non-hazardous chemical, process change to eliminate the hazard), (2) Engineering Controls (e.g., use of exhaust ventilation, guard rails, key controls, glove-boxes/glove-bags), (3) Administrative Controls/Work Practices (e.g., standard operating procedures, administrative limits, and (4) Personal Protective Equipment (PPE).

- ES&H Standards, requirements and hazard controls are flowed down through the BNL SBMS. Subject area guidelines/requirements (confined space, working with chemicals, lifting safety, lockout/Tagout, etc…) are either used to control the hazards associated with the activity or task, or incorporated into department/division standard operating procedures.

- Hazard controls are developed after the identification and analysis of hazards. Job Risk and Facility Risk Assessments (JRAs/FRAs) (including pre-job walk downs and briefings) are used to assist in the development of controls required to mitigate the hazard(s). Subject matter experts (SMEs), ES&H Coordinators, Experimental Review Coordinators, Facility Support Representatives, and ES&H professionals also have a major role in the development and implementation of hazard controls. In most cases controls are established in Experimental Safety Reviews, Standard Operating Procedures (SOPs), Work Permits, Radiological Work Permits, and technical work documents.

- Lessons learned from previous jobs or activities are used to assist in the development of hazard controls.

- Standard operating procedures are developed and written such that controls for compliance with safety and health requirements are identified, evaluated and incorporated into procedures.

4. **Perform Work within Established Controls -** The conditions and requirements to be satisfied for the performance of work are clearly established. Readiness is confirmed and work is performed safely.

a. Typical Questions you may be asked:

i. Are the methods for authorizing work and readiness to perform work formal and documented?
ii. What and/or who authorized you to perform this work?
iii. During the performance of work, what happens if additional/new hazards are identified?
iv. Are the hazard analysis documents reviewed for impacts when work scopes and work documents are changed?

BNL Implementation Processes for Performing Work Within Established Controls

- Managers/Supervisors verification that adequate preparations have been completed so that work can be performed safely. Hazards and conditions at job site as expected. Work in progress/worker observations by supervisors/managers.

- Work authorizations by approval and issuance of Experimental Safety Reviews (ESRs), Work Permits, Standard Operating Procedures (SOPs), and/or Radiological Work Permits (RWPs). Facility use agreements (FUAs) also provide the basis for establishing and maintaining the facility operations envelope.

- Staffs are trained on stop work and/or radiological stop work procedures. Stop work if imminent danger exists that could result in injury, death or significant risk of environmental or equipment damage. Radiological stop work for radiological work that does not meet Laboratory requirements or creates a threat of unplanned radiological exposures or releases.

- Inform managers/supervisors of changes in work conditions or of new hazards. Consult with subject matter experts: ES&H Coordinators, Experimental Review Coordinators, Facility Support, and/or Work Control Manager/Coordinator to develop and implement hazard controls. An authorized person amends the work plan, work permit, work orders, Standard operating procedure, experimental safety review, radiological work permit, etc…

- Environmental, industrial safety, industrial hygiene, and radiation monitoring work in progress.

- Job Training Assessments (JTAs) and/or Qualification matrices provide the training requirements to be completed before work is authorized to start.

5. Feedback and Improvement – Feedback on the adequacy of hazard controls is gathered, opportunities for improving work planning and performance of work are identified and implemented.

b. Typical Questions you may be asked:

i. How do you provide feedback about work performed, and to whom?
ii. How are lessons learned shared with other organizations, departments and/or divisions?
iii. Are formal post-activity review processes (e.g. post-job reviews, operations reviews) established and used?
iv. Is feedback from workers effectively solicited and used during work planning, execution, and closeout?

BNL Implementation and Processes for Feedback and Improvement

- Development/implementation of Job and Facility Risk Assessments (JRAs/FRAs), work plans, work permits and standard operating procedures rely on strong worker involvement and feedback. Feedback is also provided during pre-job walkthroughs and pre-job briefings.

- Workers participate in organizational self-assessments, which is another avenue for feedback and improvement opportunities. Informal assessments where feedback is solicited are through TIER I inspections, routine walkthroughs by ES&H Professionals or Facility Support Representatives, technicians and craft persons and line managers.

- Post-job critiques/briefings – workers provide feedback on good work practices as well as process improvements. In some cases lessons learned are generated and submitted to the BNL Lessons Learned Coordinator. Standard Operating Procedures, work permits, experimental safety reviews, radiological work permits, and/or JRAs/FRAs are revised to include improved or new processes.

- Safety meetings – workers communicate key safety issues or concerns identified in the field. Toolbox or plan of the day meetings serve as avenues for feedback to line management. ES&H Concerns program – feedback can come from safety hotline or workers can go through the ES&H Concerns Web-Page entry.

- Other key examples for feedback and improvement include: weekly work planning meetings, toolbox training sessions, information provided back to the maintenance management group when work is complete, open door policies, STOP Work Observations, verbal communications with planners, supervisors and managers, and through analysis of events/issues – workers participate in causal analyses.

ISM Functions - *Institution, Facility, & Activity*